FINDING OF NO SIGNIFICANT IMPACT (FONSI)

IMPROVEMENTS for DESERT VIEW WASTEWATER TREATMENT SYSTEM GRAND CANYON NATIONAL PARK

The National Park Service is proposing to improve the Desert View wastewater treatment system. Desert View is at the eastern entrance of the South Rim of Grand Canyon National Park in Coconino County, Arizona. The wastewater treatment facility at Desert View is comprised of three lined sewage lagoons totaling 1.6 surface acres. Originally, this facility was designed with two unlined facultative discharging sewage lagoons and a capacity of 18,000 gallons per day (GPD) or 12.5 gallons per minute. Since then, the two lagoons have been lined and a third lined sewage lagoon has been constructed. Since 1968, the treatment system has been intermittently discharging effluent into a natural ephemeral channel downslope from the lagoons. The treatment system is operated under the provisions of an NPDES discharge permit issued by the Environmental Protection Agency. In the mid and late 1990s the Arizona Department of Environmental Quality (ADEQ) inspected the Desert View wastewater treatment facility and identified deficiencies in the system. A 1998 ADEQ report documented the following deficiencies:

- The sewage lift station near the Desert View observation tower is old and does not comply with ADEQ alarm requirements or Occupational Safety and Health Administration (OSHA) air chamber inspectability requirements.

- The wastewater treatment facility does not have influent flow measurement.

- Current wastewater loads exceed the design capacity of the existing lagoons.

- The wastewater treatment facility needs system modifications to meet effluent quality limitations for nitrogen, pH, biological oxygen demand (BOD), and suspended solids.

In early 1998, ADEQ issued a Consent Order requiring an upgrade of facilities so water quality would meet permit compliance. In April 1998, the park began using tanker trucks to haul excess wastewater 30 miles to the South Rim wastewater treatment plant for processing. The tanker truck's route is on Desert View Drive, a winding and scenic primary road heavily used by visitors.

In September 2000 the National Park Service (NPS) prepared a draft *Environmental Assessment (EA) for Improvements to the Desert View Wastewater Treatment System*. This EA, in accordance with the National Environmental Policy Act, analyzes the impacts that would result from improving the Desert View wastewater treatment system as well as impacts resulting from implementing the no-action alternative.

PREFERRED ALTERNATIVE

The preferred alternative will construct a recirculating sand filter wastewater disposal system with surface discharge. Construction is expected to begin during 2001 and take eight to ten months to complete.

The construction of a recirculating sand filter (RSF) wastewater treatment system will specifically include:

- preparation of the site would include clearing of about .25 acres of pinyon-juniper, limited blasting, leveling of the site, and excavation for underground tanks.
- the construction of two underground septic tanks totaling 35,000 gallons in volume.
- the installation of a Parshall flume for influent flow measurement.
- the construction of an above ground, lined, and earth-bermed 4,000 square foot RSF system, with 30 inch depth of filter media.

- the installation of a new 1,600 gallon recirculation tank with timer-controlled recirculation pumps.
- the installation of a tablet chlorination/dechlorination system.
- the installation of yard piping to connect system components and extension of the electrical power grid to the treatment facility.

The completed system will treat wastewater in the following manner:

- Raw wastewater will enter a splitter box and be directed to either the lined evaporation lagoons or the RSF treatment facility flow measurement flume.
- Wastewater directed to the lagoons will evaporate or be pumped back to the RSF system.
- Following flow measurement, RSF flow will pass through septic tanks where suspended solids will be removed and liquid overflow will be directed to a recirculation tank.
- From the recirculation tank wastewater will be pumped to a RSF for removal of dissolved solids.
- The filtered effluent is then split - a portion is retained in the recirculation tank and the remainder receives disinfection with chlorine, dechlorination, and flow measurement prior to surface discharge to a natural drainage channel.
- Capability exists to return treated effluent to the evaporation lagoons and to pump from the lagoons to the RSF system.

MITIGATION MEASURES

The following mitigation measures have been selected to minimize, reduce or eliminate impacts of the proposed action:

- To minimize impacts of effluent discharge, effluent will only be discharged in a pulsed manner during the monsoon season (August and September) and winter months (November through March).
- The staging area for the construction office and construction equipment and material storage will be located in previously disturbed areas near the wastewater treatment plant. All staging areas will be returned to preconstruction conditions once construction is complete.
- Construction zones will be delineated with construction tape, snow fencing, or similar material before any construction activity is initiated. The fencing will define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- To minimize soil erosion, standard erosion control measures including silt fences and sandbags will be utilized. Any revegetation efforts will use site-adapted native species and/or native seed. Any trenching operations will use a rock saw, backhoe, and/or trencher, with excavated material side-cast for storage. After trenching is complete, bedding material will be placed and compacted in the bottom of the trench and the utility lines installed in the bedding material. Backfilling and compaction will begin immediately after the utility lines are placed into the trench and the trench surface will be returned to preconstruction contours. All trenching restoration operations will follow guidelines approved by park staff. Compacted soils will be scarified and original contours established.
- To prevent and minimize the spread of exotic vegetation, the following mitigation measures will be implemented:
    - Existing population of exotic vegetation at the construction site will be treated prior to construction activities. Existing population of exotic vegetation within the ephemeral draw below the facility will be treated during and following construction. Native vegetation will be restored to the site following construction.
    - All construction equipment that will leave the road will be pressure washed prior to entering the park.
    - Parking of vehicles will be limited to the staging area and existing roads.
    - Any fill materials will be obtained from a park-approved source.

- Post-construction monitoring and follow-up treatment of exotic vegetation will occur to ensure minimize spread and/or new introduction. Follow-up treatment could include mechanical, biological, chemical, or additional revegetation treatments. These follow-up treatments will be determined on a case-by-case basis by the Park Restoration Biologist or other qualified individual, and will be in accordance with current agency policy.

● Construction workers and supervisors will be informed about special status species. Contract provisions will require the cessation of construction activities if previously unknown special status species are encountered until park staff re-evaluates the project. Contract provisions will allow modification of the contract for any protection measures determined necessary to protect discovery.

● If a California condor occurs at the construction site, construction activities and all blasting activities within 90 meters (300 feet) of the bird will cease until it leaves on its own or until techniques are employed by permitted Park staff or Peregrine Fund personnel resulting in the individual condor leaving the area.

● Construction workers and supervisors will be informed to not interact with condors and to immediately contact the appropriate Park or Peregrine fund personnel when condor(s) occur at the construction site.

● To prevent water contamination and potential poisoning of California condors or other wildlife, a vehicle fuel leakage and spill plan will be developed and implemented. The plan will include immediate clean up of any hazardous substance. The plan will define how each hazardous substance will be treated in case of leakage or spill.

● To minimize the impacts of blasting, the following mitigation measures will be implemented:

- Prior to blasting activities, and in coordination with the construction manager, the NPS will coordinate with Peregrine Fund personnel to determine if condor(s) are roosting within one mile of the project area. If condors are roosting within one mile, blasting will be postponed until the condors leave either on their own or due to techniques employed by permitted personnel.
- Blasting mats will be used to minimize air blast and fly rock.
- Controlled/sequential blasting will be used to minimize blast noise.
- The minimum amount of charge necessary to meet the objectives will be used.
- Blasting will occur only during September 1 through February 28, which is outside the Mexican spotted owl-breeding season.
- Representatives of the NPS will review the blasting safety plan and shot design.

● All workers will be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers will also be informed of the correct procedures if previously unknown resources are uncovered during construction activities. Data recovery excavations will be carried out to mitigate adverse affects as outlined in the EA.

● Data recovery excavations will be undertaken to mitigate unavoidable adverse effects to identified archeological sites. Should unknown buried deposits be located, data recovery excavations would be undertaken. These subsurface survey and data recovery efforts will be guided by a project-specific research design. Additionally, the NPS will begin consultations under the Native American Graves Protection and Repatriation Act in the event that buried human remains are discovered during archeological excavations or project development.

ALTERNATIVES CONSIDERED

The environmental assessment evaluated two alternatives: the preferred described above and the no-action alternative. Under the no-action alternative, the Desert View wastewater treatment facility would continue under the present management operation. Excess wastewater would continue to be pumped and hauled to the South Rim wastewater treatment plant.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in the National Environmental Policy Act's Section 101.

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The preferred alternative is the environmentally preferable alternative. Following the Value Analysis Job Plan, and using selection factors from Choosing by Advantages, the environmentally preferred wastewater treatment alternative selected was alternative 2 – this is also the proposed/preferred alternative. Alternative 2 involves constructing a septic tank system with recirculating sand filter and surface discharge while upgrading the existing lagoons for continued use. The preferred power supply alternative was alternative A, simply extending the existing underground electrical grid. The proposed new construction would further disturb about 1/4 acre of already disturbed land. It would include several underground concrete vaults for sewage storage, four underground fiberglass tanks with small submersible pumps, and an above ground lined and earth-bermed recirculating sand filter. The projected average daily effluent discharge by the year 2019 is about 7019 GPD, or about 4.9 gallons per minute. This flow rate is approximately equivalent to one-half the flow available (at 60psi) from a ¾ inch garden hose. In comparison, the 1968 to 1998 surface discharge flow rate often reached 12.5 gallons per minute. Improvements would result in an approximately 60% reduction in discharge. The preferred alternative is preferable over the no-action alternative because it will eliminate the need to haul excess wastewater 30 miles to the South Rim wastewater treatment plant and ensure reliable, safe and healthful treatment of wastewater at Desert View.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. The preferred alternative will not affect geology; prime and unique farmlands; wetlands; floodplains; air quality; minorities or low-income populations or communities; or local or regional socioeconomics. The preferred alternative will have negligible, short-term, adverse impact to water quality; negligible, long-term adverse impacts to soils and biotic communities; minor, long-term, adverse impacts to California condor; moderate, long-term adverse impacts on two archeological sites; minor, long-term beneficial impacts to peregrine falcon; and moderate, long-term beneficial impacts to visitor experience and park operations.

Degree of effect on public health or safety. The preferred alternative will have no effect on public health or safety because the project area is in an administrative area the general public does not frequent. The

project area is located such that traffic flow will not be affected during construction and no disruption to visitors, campers, or park residents will occur.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. As described in the environmental assessment, historic resources, prime farmlands, and wetlands will not be affected. No wild and scenic rivers are near Desert View and none will be affected by the preferred alternative. No ecologically critical areas, including critical habitat for threatened, endangered, or proposed species, have been designated in the project area and none will be affected. Although the preferred alternative will adversely affect two archeological sites in the project area, the NPS will mitigate adverse effects by data recovery excavations carried out in advance of construction. The data recovery will be in accordance with an approved plan which was consulted on with the Arizona State Historic Preservation Office and concerned tribal officials. Consultation with the Arizona State Historic Preservation Office and concerned tribal officials has been completed.

Degree to which effects on the quality of the human environment are likely to be highly controversial. There were no highly controversial effects identified during either preparation of the environmental assessment or the public review period. Although some professional differences of opinion over the effects of effluent discharge occurred, these have been addressed through incorporation of mitigation measures to reduce environmental impacts of effluent discharge.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks. There were no highly uncertain, unique or unknown risks identified in the environmental assessment or the public review period.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The preferred alternative neither establishes a precedent for future actions with significant effect nor represents a decision in principle about a future consideration. Although the preferred alternative is part of a comprehensive effort outlined in the 1995 *General Management Plan* (GMP) to change Desert View into a transportation hub of the East Rim, implementation of the preferred alternative would not preclude any future actions from occurring or not occurring. Development of Desert View could occur with or without the implementation of the preferred alternative. In addition, implementation of the preferred alternative would not necessarily result in the future development of Desert View.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Impacts of the preferred alternative identified in the environmental assessment were to soils, biotic communities, peregrine falcons, California condors, archeological sites, water quality, visitor experience, and park operations. As described in the environmental assessment, a variety of past, present, and reasonably foreseeable future actions have or may affect resources in the Desert View area. However, the adverse impacts of the preferred alternative would be a relatively minor component of the overall minor cumulative impact, due to the limited scope of the preferred alternative.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The project area was surveyed for archeological resources during the fall of 1999. Three sites were identified within the project area, and all three sites are recommended eligible for the National Register of Historic Places under the park's existing national register nomination. The preferred alternative will adversely affect two of these sites. However the NPS will mitigate adverse effects by data recovery excavations carried out in advance of construction and in accordance with an

approved plan that has been consulted on with the Arizona State Historic Preservation Office and concerned tribal officials. Consultation with the Arizona State Historic Preservation Office and concerned tribal officials has been completed. If during construction previously unknown archeological resources are discovered, all work in the immediate vicinity of the discovery will be halted until the resources are identified and documented. An appropriate mitigation strategy, if necessary, would be developed in consultation with the Arizona State Historic Preservation Office and concerned tribal officials.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat. The preferred alternative may affect, but is not likely to adversely affect, Mexican spotted owls and California condor. The re-establishment of discharge flows may attract condors to the area due to changes in food sources, which may affect their foraging and roosting behavior. However, the incorporation of mitigation measures will minimize the impacts of ecosystem change around and below the discharge site. In addition, construction activities could disturb Mexican spotted owls. The U.S. Fish and Wildlife Service has been consulted and concurred that Mexican spotted owls and condors may be affected, but are not likely to be adversely affected, by the implementation of this proposal.

Whether the action threatens a violation of Federal, state, or local environmental protection law. The preferred alternative violates no federal, state, or local environmental protection laws.

IMPAIRMENT OF PARK RESOURCES OR VALUES

In addition to determining the environmental consequences of the preferred and other alternatives, National Park Service policy (*Management Policies*, 2001) requires analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of the park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. An impact to any park resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Grand Canyon National Park; (2) key to the natural or cultural integrity of the park or to opportunities for

enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the Grand Canyon National Park's resource or values.

PUBLIC INVOLVEMENT

The environmental assessment was made available for public review and comment during a 30-day period ending January 5, 2001. Two letters were received. Both letters did not support the preferred alternative and favored a "total containment" alternative that was discussed and dismissed in the NPS Value Analysis for the project. The Value Analysis is a systematic approach of evaluating alternatives in context with the value of identified issues, concerns and functions. The letters outlined concerns with the project, which are addressed in the attached appendix to this FONSI.

CONCLUSION

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are minor to moderate and temporary in effect. There are no significant unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, major cumulative impacts, unique or unknown risks, or elements of precedence were identified. Implementing the preferred alternative will only result in a long-term, minor to moderate, adverse impact. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended: Joseph D. Alston — 9-18-01

Joe Alston
Superintendent, Grand Canyon National Park

Date

Approved: Karen P. Wade — 9/20/01

Karen P. Wade
Intermountain Regional Director

Date

APPENDIX TO FONSI

IMPROVEMENTS for DESERT VIEW WASTEWATER TREATMENT SYSTEM
GRAND CANYON NATIONAL PARK

The NPS received two letters commenting on the Improvements for Desert View Wastewater Treatment System Draft Environmental Assessment (September 2000). The comment period ended January 5, 2001. An interdisciplinary team reviewed the letters and identified substantive comments. Substantive comments were considered to be comments which:

- question, with reasonable basis, the accuracy of information in the EA.
- question, with reasonable basis, the adequacy of environmental analysis.
- present reasonable alternatives other than those presented in the EA.
- cause changes or revisions in the proposal.

Below are the comments received which were considered to be substantive and the NPS response. Comments have been reworded in some circumstances to clarify the concern to the reader when needed. However, rewording of comments was kept to a minimum.

***Comment**:* We are concerned that dumping waste water into Grand Canyon's natural environment will result in an artificial wetland, damaging the existing ecosystem.

> ***Response**:* A mitigation measure has been incorporated to release treated wastewater in a pulsed manner from the treatment facility into a rock filled channel during monsoons and winter, when free water is naturally available. This mitigation would ensure the habitat type and function of the ecosystem below the wastewater treatment facility does not change.

***Comment**:* This project will provide an invasion path for exotic plants, such as cheat grass, into the Canyon's wilderness. As the case at Rowe Well below the Grand Canyon Village's sewage treatment plant demonstrates, excessive and unnatural moisture results in an invasion of grasses, forbs (native and exotic species) along with the destruction of existing vegetation including old growth trees.

> ***Response**:* A mitigation measure has been added to release treated wastewater in a pulsed manner from the treatment facility into a rock filled channel during monsoons and winter, when free water is naturally available. This mitigation would ensure the habitat type and function of the ecosystem below the wastewater treatment facility does not change.

***Comment**:* The proposed action perpetuates an "artificial and supplemental water source" that will undoubtedly result in unnatural concentrations of some species, for example elk, domestic cattle, at the expense of others.

> ***Response**:* A mitigation measure has been added to release treated wastewater in a pulsed manner from the treatment facility into a rock filled channel during monsoons and winter, when free water is naturally available. This mitigation would ensure unnatural concentrations of wildlife do not occur.

***Comment**:* We strongly believe the preferred alternative violates the mandate of park resources and values left unimpaired and the "conservation mandate".

> ***Response**:* The NPS has management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park. Although Congress has given the NPS

management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. As stated previously in the FONSI, the impacts of the preferred alternative would not constitute impairment (see section "Impairment of Park Resources or Values").

***Comment**:* The proposed project may conflict with Executive Order 13112 which requires Federal Agencies to "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

***Response**:* Mitigation measures have been incorporated into the project to address the issue of exotic vegetation. Existing population of exotic vegetation at the construction site will be treated prior to construction activities. Existing population of exotic vegetation within the ephemeral draw below the facility will be treated during and following construction. Native vegetation will be restored to the site following construction. In addition, monitoring and follow-up treatment will occur after construction to minimize spread and new introductions of exotic species. The NPS does not believe this action is likely to cause or promote the introduction or spread of invasive species due to the implementation of these mitigation measures.

***Comment**:* We argue that capital costs necessary to implement the alternative least impacting to the natural environment should have been factored in during the process

***Response**:* Alternative 5 of the Value Analysis (Total Containment) was not dismissed on the basis of capital cost alone. The alternative permanently alters six to eight acres of undisturbed habitat adjacent to the site. The construction of lagoons on a sloped site (6% - 8%) with eighteen inches to bedrock is difficult and problematic. The construction impacts of Alternative 5 of the Value Analysis were substantially greater than any other alternative.

***Comment**:* The evaporative residue of the preferred alternative creates a pollutant spill since it can be assumed surface water will not saturate into the ground.

***Response**:* The discharge from the preferred alternative will meet all state and federal discharge requirements. The assumption that the discharge would not infiltrate into the surrounding soil was part of a model used to determine potential impacts of the discharge. In reality, a large quantity of the water will be eliminated by evapotranspiration or infiltrate into the surrounding soil. This is largely due to the permeable nature of the upper sedimentary layers underlying Desert View and the evapotranspiration potential of the surrounding pinyon-juniper community type.

***Comment**:* Long term indirect impacts from an altered ecosystem may attract native wildlife species in an unnatural abundance, including the eventual habituation of deer and elk.

***Response**:* A mitigation measure has been added to release treated wastewater in a pulsed manner from the treatment facility into a rock filled channel during monsoons and winter, when free water is naturally available. This mitigation would ensure unnatural concentrations of wildlife do not occur.

***Comment**:* An altered ecosystem may attract trespass cattle and sheep from adjacent park lands.

***Response**:* Grand Canyon National Park has received funding to repair and strengthen existing park boundary fencing which will substantially lessen the likelihood of trespass livestock entering the area. With the additional mitigation measure of releasing treated wastewater in a pulsed manner

from the treatment facility into a rock filled channel during monsoons and winter, when there is already abundant free water, there will be considerably less chance that large ungulates will be attracted to the area.

***Comment**:* We are concerned the NPS has dismissed from full evaluation the least environmentally damaging alternative for the upgrade of the Desert View Wastewater Treatment System. We urge you to reconsider your selection of the preferred alternative and fully evaluate the environmental benefits of Alternative 5 (from the Value Analysis, Total Containment). Alternative 5 was inappropriately dismissed from the Value Analysis.

***Response**:* Alternative 5 from the Value Analysis was not dismissed on the basis of capital cost alone. The alternative permanently alters six to eight acres of undisturbed habitat adjacent to the site. The construction of lagoons on a sloped site (6% - 8%) with eighteen inches to bedrock is difficult and problematic. The construction impacts of Alternative 5 were substantially greater than any other alternative.

***Comment**:* There are inconsistencies in dismissal of Alternative 5 (from the Value Analysis) that may inflate the environmental costs of this alternative, without adequately considering the environmental benefits. For example, the EA says the existing 1.6 acres lagoon system would have to be increased to 4.4 (an increase of 2.8 acres), but that "approximately 8 acres of vegetated land would be destroyed for construction." The EA does not explain why additional ponds covering 2.8 acres of surface area require 5.2 additional acres of surface to be "destroyed."

***Response**:* The total containment alternative from the Value Analysis requires constructing additional lagoons with a surface area of 2.8 acres. The sides of the lagoons are constructed of reinforced, compacted earth with internal slopes of 3:1 (three feet of run per one foot of rise) and external slopes of 4:1. The top of the earth berm would be 15 to 20 feet wide. Additionally, the lagoons must be designed to increase the storage capacity of the system to compensate for periods of low evaporation or high precipitation. Typically this would mean the operating depth of the lagoon would be three to four feet below the top of the lagoon structure (State regulations require a minimum of two feet of freeboard). The terrain at the Desert View site slopes 6% to 8% to the south. This change in elevation requires a larger footprint to construct the earthen berms. The area required to construct the lagoon structure is approximately six acres. Additional area would be required during construction for site access, storage of excavated materials, and construction activities.

***Comment**:* The EA did not look at the relative impact of 30 years of discharge into the "ephemeral channel" which will result in changes in the vegetation and wildlife use of the area, compared to a limited surface area disturbance within a fenced area for the lagoons. Changes in vegetation and free water caused by the effluent could lead to increased elk and deer use thus attracting California Condor foraging to the area. There is no basis in the document for the assessment that attracting condors to an area that is expected to see a 75% increase in visitors, significant new residential development, and other increases in infrastructure and use is minor.

***Response**:* A mitigation measure has been added to release treated wastewater in a pulsed manner from the treatment facility into a rock filled channel during monsoons and winter. As there is already abundant free water during these periods, there will be considerably less chance that large ungulates will be attracted to the area. Consequently, the chance of attracting condors to the area will be lessened. Radio tracking data acquired by The Peregrine Fund also indicates that condors are

infrequent visitors to the south rim during winter. The likelihood that condors will be attracted to the area is minor.

***Comment**:* The analysis fails to look at the cumulative impact of this project. The relationship between this project and the construction at Desert View is not seriously evaluated in this document—the development is taken as a given, but it could not occur without the expansion of this treatment facility and therefore the cumulative impact of this project should be evaluated.

***Response**:* The Grand Canyon National Park General Management Plan indicates the wastewater treatment facilities will be upgraded to accommodate an increase in resident population and visitor use. However, this upgrade of facilities is the result of a consent agreement with the State of Arizona department of Environmental Quality. This upgrade is required because the existing facility does not meet federal and state wastewater discharge requirements and is needed regardless of any further development in the area.

As part of the initial planning in the area, the existing water use was examined closely. In 1997, the total water use at Desert View was 4,753,000 gallons. In late 1998, a water conservation project was implemented which installed water-conserving fixtures at all Desert View facilities. This effort reduced water consumption at Desert View to 2,617,000 gallons in 1999. We currently estimate that the increased visitor use and additional development in the Desert View area will increase water usage to 4,000,000 gallons per year, less than the historical 1997 use.

Cumulative impacts for this project were analyzed in the EA as well as cumulative impacts of the no-action alternative. It was recognized in the EA that without upgrades to the treatment facility, the Desert View wastewater treatment facility would be closed and likely result in closure of the Desert View area to visitors (page 25 of the EA).

***Comment**:* The Preferred Alternative will result in the discharge of wastewater into a channel within the park, creating a possible vector for the spread of exotic species. This proposal may conflict with Executive Order 13112 which requires Federal Agencies to "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

***Response**:* Mitigation measures have been added to address the issue of exotic vegetation. Existing population of exotic vegetation at the construction site will be treated prior to construction activities. Existing population of exotic vegetation within the ephemeral draw below the facility will be treated during and following construction. Native vegetation will be restored to the site following construction. In addition, monitoring and follow-up treatment will occur after construction to minimize spread and new introductions of exotic species. The NPS doe not believe this action is likely to cause or promote the introduction or spread of invasive species due to the implementation of these mitigation measures.

***Comment**:* Alternative 5 (of the Value Analysis) was dismissed, it appears, largely because of "high capital cost". Yet given the projected investment in infrastructure development in the area which depend on the improvement to the wastewater treatment plant and the potential long-term impact to the Park's ecology of the preferred alternative, investment in the environmentally preferred alternative is warranted.

***Response**:* Alternative 5 of the Value Analysis was not dismissed on the basis of capital cost alone. The alternative permanently alters six to eight acres of undisturbed habitat adjacent to the site. The construction of lagoons on a sloped site (6% - 8%) with eighteen inches to bedrock is difficult and

problematic. The construction impacts of Alternative 5 were substantially greater than any other alternative.

***Comment**:* If the project is within 0.5 miles of Mexican spotted owl (MSO) habitat, we recommend that habitat be surveyed for MSO per standard protocol. If owl(s) are detected and the location qualifies as an owl site, then an appropriate Protected Activity Center should be delineated, as recommended by the MSO Recovery Plan.

***Response**:* The project area is greater than 0.5 mile from potential Mexican spotted owl habitat located below the rim. There would be no effect from this project on Mexican spotted owl or its habitat.

***Comment**:* If blasting is to be part of the project, then any MSO habitat within one mile of the project area should be surveyed for MSO. If owl(s) are detected within the distances of the project described above, we recommend that appropriate means to eliminate disturbance impacts to MSO be incorporated into the project.

***Response**:* The preferred alternative will allow blasting. The actual use of blasting is a contractor option, but the use of explosives is the preferred and likely method of reducing solid rock to allow efficient removal. Effects of blasting activities will be mitigated and disturbance to Mexican spotted owls will be minimal. The mitigation measures will minimize the intensity and noise level of blasting activities. In addition, blasting activities will be limited to the non-breeding season of the owl and be of short duration (less than one day) due to the small area needing excavation.

***Comment**:* We recommend the Park coordinate with Peregrine Fund personnel to determine if condors are roosting within 1 mile of the project area prior to any blasting activity. If condors occur within one mile, blasting should be postponed until the condors leave.

***Response**:* A mitigation measure has been incorporated in accordance with Fish and Wildlife Services to determine if condors are roosting within one mile of the project area prior to blasting activities and to take appropriate actions as necessary.

***Comment**:* Procedures should be developed and implemented to monitor, prevent, and immediately remove any fuels or fluids discharged from vehicles or equipment in the project area where condors could occur.

***Response**:* Spill plans will be required in the construction contract to protect wildlife.

***Comment**:* If condors approach or are found at the project area during construction, the Park should coordinate with Peregrine Fund personnel to determine the appropriate action to be taken.

***Response**:* A mitigation measure is incorporated into the project that requires contractors to cease activities if a California condor visits the construction site. The Park has certified personnel that will deal with California condors should they visit the site. Peregrine Fund personnel have been contacted during the development of these mitigation measures.

ERRATA

IMPROVEMENTS for DESERT VIEW WASTEWATER TREATMENT SYSTEM
GRAND CANYON NATIONAL PARK

The following corrections are hearby made to the *Improvements for Desert View Wastewater Treatment System Draft Environmental Assessment* (September 2000).

Page 10, Alternative B, second bullet, change to: Two underground septic tanks totaling 35,000 gallons in volume.

Page 10, Alternative B, third bullet, change to: A 1,600 gallon recirculation tank with timer-controlled recirculation pumps for dosing onto a 4,000 square foot recirculating sand filter system with 30 inch depth of filter media.